

Chapter - 8

Wildlife Habitat Protection and Management

1. Introduction

The rich diversity of wildlife species located within the Chesapeake Forest Lands, from endangered Delmarva Fox Squirrels (DFS) to recreational game species, requires the use of a wide array of adaptive management techniques. The objective is to utilize adaptive management to address the ecological needs of this diversity of wildlife species and habitat types, includes different successional stages of forest, (including distribution, size, composition, and juxtaposition of forest patches), riparian buffers, corridors, and interior forest habitat. This approach requires management prescriptions that are anchored in the ecological principle that all of the habitats function in relationship to each other. Only by managing for this relationship, such as Forest Interior Dwelling Birds species (FIDS) habitat serving DFS recovery efforts, will the best combination of wildlife habitat needs be realized on the ground. This is not a definitive prescription, rather an adaptive attempt to best serve the species located on these lands. Using this approach, this part of the plan is broken into three sections: Wildlife Buffer Zones 3&4; Rare, Threatened and Endangered Species; and Wildlife Management Opportunities.

2. Wildlife Buffers Zones 3 and 4

These areas are intended to provide additional water quality protection as well as provide riparian forest habitat that is important for many wildlife species. See Chapter 6 of this Plan for a description of all four Water Quality/Wildlife Buffer Zones.

Wildlife Buffer Zone 3- Are expanded buffers adjacent to streams outside of Delmarva Fox squirrel habitat areas. They are intended to extend a minimum 150 feet from the water's edge (or 50 feet outside the edge of riparian forest buffer area 2, where that buffer has been set to 100' in width). These buffers will provide additional nutrient uptake for water quality, as well as increased forest interior habitat for wildlife. They will be managed for the creation and maintenance of mature mixed forests. Harvesting will be done by individual tree selection, designed to enhance wildlife habitat and buffer function. If these areas are thinned, a basal area (BA) of 70 square feet will be retained unless other habitat considerations warrant an alternate prescription. Because a mixture of hardwoods and pines is the goal, no aerial herbicides or fertilizers will be used on these buffers.

Wildlife Buffer Zone 4- Are expanded buffers adjacent to streams located in Delmarva Fox squirrel habitat areas. They will extend a minimum of 300 feet from the water's edge (or 200' outside the edge of riparian forest buffer area 2, where that buffer has been set to 100' in width). The objective is to provide a forest buffer managed for mature forest cover that, where the State ownership extends on both sides of a stream, totals at least 600 feet in width. They will also provide expanded habitat for Forest interior dwelling birds. The stand should be maintained in a fully stocked condition while favoring a mixture of large hardwoods (>18" DBH) and large pine (>16" DBH). DBH = diameter breast height of the tree at 4.5 feet above the ground.

3. Rare, Threatened, and Endangered Species - *Delmarva Fox Squirrel*

General Objectives of Delmarva Fox Squirrel Management

Objectives of managing forest stands for DFS include 1) provision of food and shelter and 2) maintenance of connectivity between forest stands to allow regular movements and dispersal by DFS in order to maintain genetic viability. The food and shelter needs of DFS are generally met by promoting mature forests with diverse species compositions, especially those that favor hardwood. Forest maturity is a relative term; forests need to be old enough to provide hard and soft mast and to contain numerous cavities. Connectivity between forest stands containing DFS should be maintained by not isolating those stands through extensive timber harvest or conversion to non-forest land uses.

Identification of DFS Management Areas

Maryland DNR non-game and endangered species managers were consulted on locations of areas suitable for management of DFS (Figure 14). Approaches to their management were discussed and the following approach was recommended:

- 1) Designate special management areas to include tracts currently occupied by DFS, (DFS Core Areas).
- 2) Designate special management areas to include tracts with potential for future re-introductions of DFS (Future Core).
- 3) Designate special management areas to include tracts with habitat suitable for meeting some of the DFS needs, but lacking aggregate size to meet the characteristics of year-round habitat (DFS Friendly).

See Table 19 for an estimated acreage of the three DFS areas, as developed from the GIS dataset for the Chesapeake Forest.

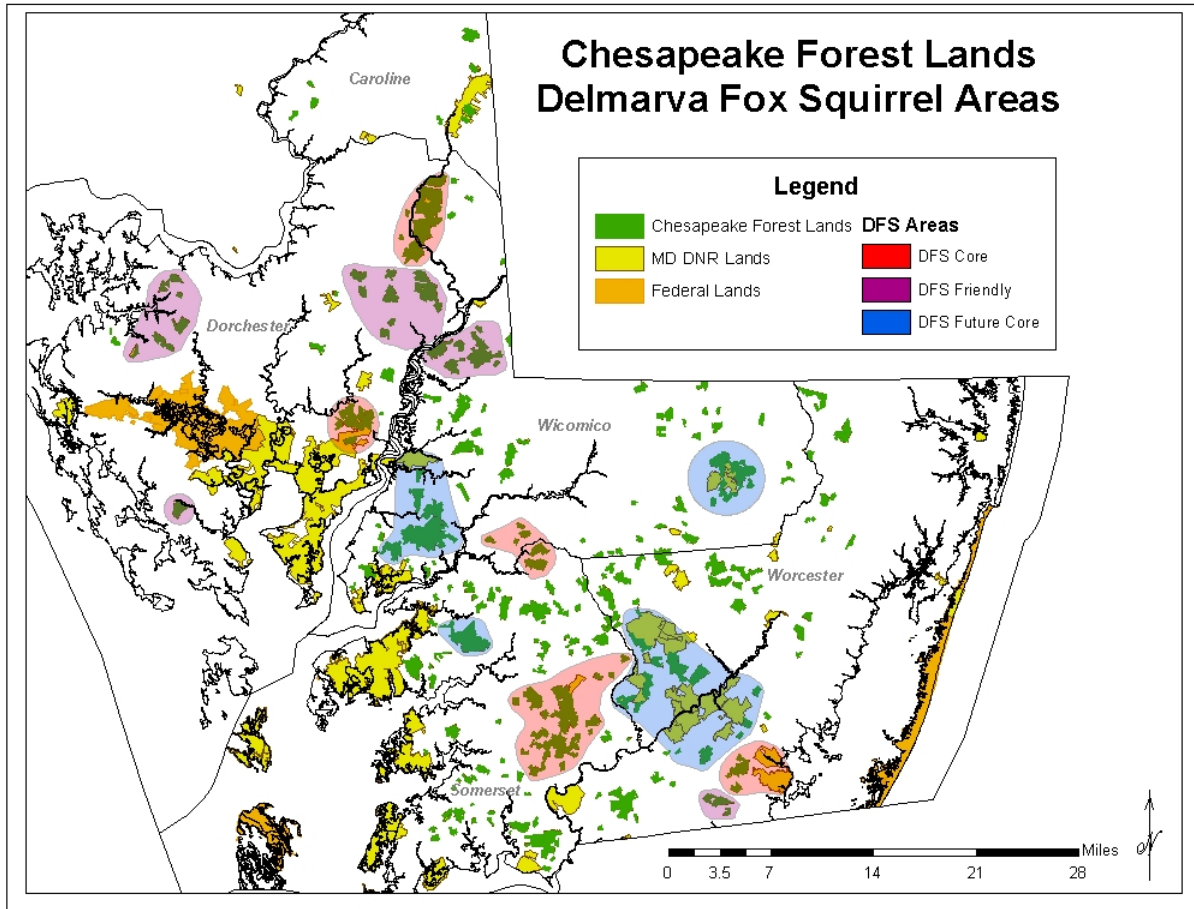
To improve habitat for DFS, specific forest management recommendations were developed for each of the above three special management areas. However due to the similarity of the recommendations, all management recommendations will be based on those developed for the DFS Core Areas. These recommendations are detailed in the section on *Forest Management within DFS Areas*.

Table 19. Estimated acres in DFS management areas,

Ownership	DFS Core Acres	DFS Friendly	DFS Future Core Acres	Total Acres
Chesapeake Forest Lands	13,469	7,450	12,980	33,899

U. S. Fish and Wildlife Service Endangered Species personnel informally reviewed the Department's recommendations. They concurred with the locations suggested by the Department for each of the tiered special management areas, except one area recommended by the Department as core was not known by them to contain Fox Squirrels. Timber prescriptions recommended by the Department were reviewed by USFWS and found to be generally complementary to DFS recovery efforts.

Figure 14: Delmarva Fox Squirrel areas on the Chesapeake Forest.



DFS Core Areas

DFS Core Areas are defined as a complex of Chesapeake Forest Lands currently occupied by DFS or within the immediate vicinity of DFS populations. Core areas are to be managed primarily for DFS suitable habitat and to function as a source population of DFS for the surrounding landscape. There are currently 5 DFS core areas on Chesapeake Forest Lands with the majority of DFS core acreage occurring in Somerset County (6,557 acres) and Dorchester County (5,498 acres). [Figure 14]

DFS Future Core Areas

DFS Future Core areas are defined as the complex of Chesapeake Forest Lands where location, vegetative composition and structure appear suitable for translocation of DFS. There are 5 designated Future Core areas on Chesapeake Forest Lands (See Figure 14). DFS future core areas are to be managed primarily for DFS suitable habitat with the expectation that they would function as a source population of DFS for the surrounding landscape following establishment. Forest Management within DFS Reintroduction (Future Core) Areas should be the same as in DFS Core Areas.

DFS Friendly Areas

DFS Friendly Areas are defined as the complex or individual parcels of Chesapeake Forest Lands not recognized as DFS Core or Future Core, but currently occupied by DFS, within the immediate vicinity of DFS populations, or likely to be occupied by DFS in the near future. These areas are to be managed in a manner that complements DFS suitable habitat, but DFS friendly areas are not expected to function as a source population of DFS for the surrounding landscape. There were four DFS Friendly Areas designated on Chesapeake Forest Lands. [Figure 14]

Forest Management within DFS Areas

Forest management will encourage mature hardwood or mixed pine-hardwood stands. Retain hardwood stands. Hardwood stands will not be converted to other forest types. Within the context of the Maryland Pine Tree Reforestation Law, opportunities to convert loblolly pine stands to mixed pine/hardwood stands will be sought.

It is assumed that stands become potential suitable habitat for DFS when loblolly pines >16" DBH comprise >10% of the standing basal area. Timber harvest will be scheduled so that a minimum of 50% of the stands within a DFS core management area is suitable DFS habitat. Suitability will be maintained for at least half the life span of individual stands. TAU YIELD projections, (the forest model used in the original plan), suggest that 16" DBH loblolly pine begin to appear on low site index sites at 40 years of age, and high site index sites at 30 years of age. Therefore, on low site index sites, the combination of these two recommendations suggests a rotation length of at least 60 to 80 years. On high site index sites, the combination of these two recommendations suggests a rotation length of at least 40 to 60 years.

In upland pine stands, maintain and encourage overstory hardwood inclusions wherever possible. Maintain hardwood mid-story, except selective thinning to promote certain mast bearing species or important spring bud sources that are complementary to DFS habitat improvement.

First and second thinning of upland sites will help in concentrating growth on larger diameter stems. First thinnings should result in residual stocking levels that maximize growth. Because DFS may be present at the time of second thinning, residual basal area following second thinnings should not be less than 70 sq ft BA. Low thinning techniques will be utilized to remove smaller or suppressed trees.

Final harvest should be in units of 50 to 100 acres with commercial harvest re-entry scheduled for every 10 years. To meet the 50% suitable habitat goal, when final harvest cuts are 100 acres in size, management units for DFS need to be at least 600 acres on high site index sites and 800 acres on low site index sites. When final harvest cuts are 50 acres in size, management units for DFS need to be at least 300 acres on high site index sites and 400 acres on low site index sites. In order to meet Forest Stewardship Council (FSC) standards, final harvest by the clearcut method cannot exceed 40 acres in size. So a combination of harvest methods by clearcutting and shelterwood may need to be a combined to meet projected harvest levels. Any variance to this standard would have to be granted by FSC based on ecological necessity.

Forested corridors shall be maintained as linkages between suitable habitats at all times. Corridor dimensions and characteristics will change with landscape and site conditions but should generally be at least 300 feet wide and composed of mature pine, hardwoods, or mixed wood.

Prescribed fire to control help understory vegetation and promote open understory conditions is recommended, particularly after stands have been thinned once or twice. Burning every three

to five years may be required to promote and maintain the desired vegetative conditions, which may raise concerns with the adjacent property owners regarding the amount of fire and smoke that would be involved. Where that becomes a problem, ground application of herbicides may be needed in some places.

Contribution of DFS Management on CF lands towards DFS Recovery

The Recovery Plan for DFS (USFWS 1993) documents that DFS can be reclassified to threatened status when:

- 1) Enough is known of DFS to allow effective management,
- 2) Benchmark populations are stable or expanding and
- 3) Ten trans-located colonies are established throughout the historical range.

De-listing of DFS will be considered when:

- 1) Five additional colonies are established outside of the remaining natural range,
- 2) Trans-located colonies are stable or expanding, and
- 3) Enough suitable habitat is protected in perpetuity to allow new populations to expand and intermingle with existing populations.

DFS management on Chesapeake Forest Lands will protect 5 existing populations of DFS, barring some unforeseen catastrophe, in perpetuity. DFS management will create suitable habitat for the creation of 4 new populations. Management of DFS friendly habitat will allow populations to expand and intermingle, and may possibly result in range expansion. DFS management on Chesapeake Forest Lands will also benefit Federal management actions on Blackwater National Wildlife Refuge.

Planning Horizon for DFS: Time to Achieve Desired Future Condition

Over 50% of DFS core areas are in the open (1 to 5 year-old trees) or sapling (6 to 15 years old) stage and are therefore 30 to 50 years from providing the mature pine/hardwood forests required by DFS. DFS future core areas and DFS friendly areas are in a similar condition with 48% and 54% in open or sapling stages. A pro-active thinning and, where possible, prescribed fire program will be needed to allow these plantations to grow into the desired condition. If prescribed fire is to be used to any extent, an intensive public education program on its value will be needed. Any additional silvicultural practices (such as fertilization) that can be done without adverse environmental impact should be considered in order to achieve the goal of growing large trees as rapidly as feasible.

Adaptive Management Considerations for DFS

Specific descriptive or prescriptive habitat management requirements for DFS are still the subject of considerable scientific scrutiny. Therefore, the land managers of Chesapeake Forest Lands should expect that the demonstrated preference or acceptance by DFS for habitats created on the forest may eventually drive future habitat management considerations. While the guidelines listed above represent the best currently available science, they no doubt will change as more is learned of the species. Monitoring of DFS populations and habitat use is critical to successful long-term planning. Experimental manipulation of stand conditions to better describe DFS critical habitat needs is also strongly recommended.

Bald Eagle

There are currently some 17 eagle nests located in or near Chesapeake Forest Lands. These will change over time as the birds move or populations continue to expand. Guidelines established by the Department will be followed around all eagle nest trees. These guidelines currently require:

- Establishment of a protection area of a 1/4 mile radius around the nest tree. Within this area, there are three zones of protection: Zone 1 extends from the nest tree to a radius of 330 feet; Zone 2 extends from 330 feet to 660 feet in radius; and Zone 3 extends from 660 feet to 1320 feet (1/4 mile). The management guidelines are:
- No land use changes, including development or timber harvesting, in Zone 1;
- No construction activities such as clearing, grading, building, etc., within Zones 1 or 2, and ideally should occur no closer than 750 feet from the nest;
- Selective timber harvesting may be done in Zone 2, but clearcutting should be avoided; and,
- No construction or timber harvesting activities should occur within the 1/4 mile protection zone during the eagle nesting season, which is from December 15th through June 15th.

Other Rare, Threatened and Endangered Species

Other than DFS and Bald Eagles, another 101 species considered as rare, threatened, or endangered by the Department are currently found on or near CFL tracts. These species are located either within two sites designated by state law as Natural Heritage Areas or within sites called Ecologically Significant Areas (ESA) comprising a total of 13,993 acres. The number of species and/or Ecologically Significant Areas is subject to change and it is up to the Land Manager in conjunction with the DNR Heritage Ecologist to monitor and report these changes if and when they happen. Samples of the types of areas and management prescriptions that might be needed are included in Chapter 7 of this document.

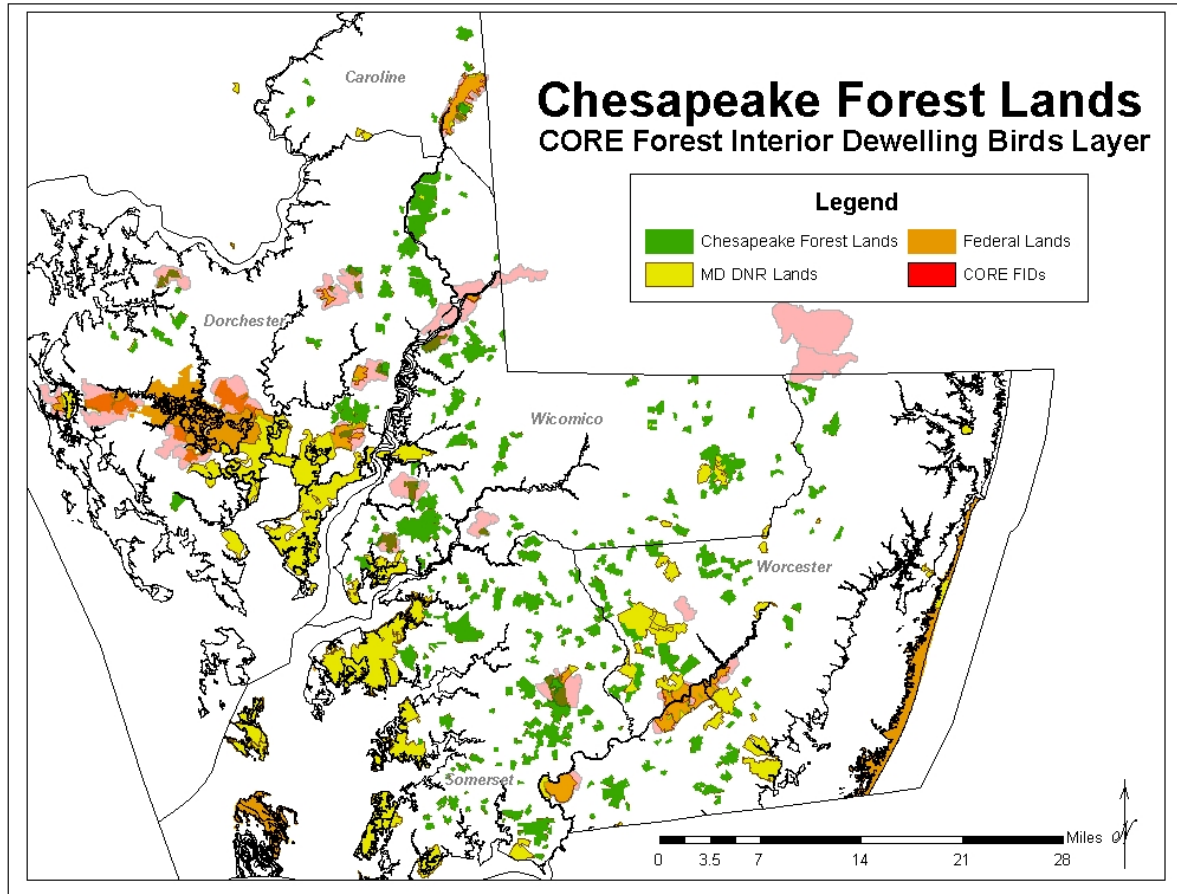
4. Management Opportunities for other Wildlife Species

Forest Interior Dwelling Bird Species (FIDS):

General Objectives for Forest Interior Dwelling Birds (FIDS) Habitat Management

DNR Non-game and Heritage personnel were consulted on FIDS management. In general FIDS bird habitat is defined as contiguous forested blocks with interior forest habitat (forest at least 300' from nearest edge) comprising 25% of the forest area. These blocks can range from 100 to 500+ acres and ideally contain a perennial stream or river with a 600' wide riparian forest buffer. Conservation recommendations for FIDS habitat have been developed for Hardwood & Mixed Hardwood Pine Forests and Loblolly Pine Forests. In most cases these prescriptions overlap with the management of the Delmarva Fox Squirrel (DFS) habitat areas and Riparian Forests. On all DFS areas, management for FIDS habitat will be considered in conjunction with the goals for DFS recovery. Optimal Core FIDS habitat comprising 3,728 acres has been identified on Chesapeake Forest Lands (See Figure 15) and will be managed according to FIDS guidelines.

Figure 15: CORE FID Habitat Areas



Timber Harvest Plan Guidelines

Maryland Wildlife and Heritage Service has published a set of guidelines entitled “FIDS Timber Harvest Guidelines” and dated (Appendix E). These guidelines will be utilized within the DFS and CORE FIDS areas on Chesapeake Forest Lands.

Habitat Overlap

Nearly 30,000 acres of Chesapeake Forest Lands will be dedicated to DFS management. On this acreage at least 50% of the area will be devoted to relatively large blocks of mature forest. DFS core areas, for example will be managed in a way that produces 300 to 400 acre mature forest blocks. Within these areas riparian buffers will connect the large forest blocks. As noted above in DFS core areas, the Riparian forest buffer “Zone 4”, is 600 feet in total width. Outside of DFS areas, Riparian forest buffers are 300 feet in total width.

While current research suggests that DFS can persist in somewhat fragmented forest conditions whereas FIDS cannot, the management prescriptions made above and elsewhere in this plan for large contiguous forest blocks and wide forested riparian buffers should adequately address the needs for both species.

Amphibians

Locations and special management prescriptions for some amphibian habitats are included within the Ecologically Significant Areas land classification (Chapter 7). Other amphibian habitat will be protected through the management system of Riparian forest buffer areas. Forest managers with assistance from a Heritage Biologist will need to identify any important amphibian habitat and adjust forest harvest operations to protect these habitats. Seasonal wetlands and vernal pools are nearly impossible to adequately survey and map from GIS data. Therefore, these critical habitats will need to be identified, GPS-located and protected during field examinations.

Management Opportunities for Game Species

Personnel with MD DNR Wildlife and Heritage Division were consulted on game species of concern, hunting programs and special habitat considerations. Several sites were visited in the field and recommendations discussed.

Most game species are thriving on Chesapeake Forest Lands but woodcock and northern bobwhite quail are declining throughout the region. These two species were identified as priorities for habitat management on the forest.

Within the hierarchy of land classifications on the forest, opportunities for quail and woodcock habitat management were sought on the acres that remained in the general timber management category.

Northern Bobwhite Quail Management

Within the hierarchy of land classifications of Chesapeake Forest, opportunities for quail habitat management should be identified and prescribed for within the General Timber Management land classification. Also, where applicable, quail habitat management practices should be included in the management category designations where these practices are in concert with the management recommendations for ESA areas, FID areas and DFS areas.

The general goal for quail management is to provide quality permanent herbaceous habitat, not less than 10 acres in size, adjacent to a mosaic of older pine stands with open under stories and regenerating pine/hardwood stands. The permanent herbaceous area should be managed for native herbaceous plants by allowing natural regeneration or planting some native warm season grasses. These permanent herbaceous areas should be located on the edge of the site so as not to fragment the forest stands on the tract. The herbaceous condition can be maintained by periodic controlled burns and/or disking. Quail benefit from periodic disturbances to their habitat. The older pine stands should be managed for southern Savannah type conditions by thinning to allow sunlight to reach 40-70% of the forest floor. Thinnings should be followed by controlled burns every 2–5 years depending on site conditions and available resources. Timber harvest adjacent to the permanent herbaceous habitat site should be in the 10 to 50 acre size providing a greater diversity in timber age classes and habitats around the core quail site. Regenerating mixed pine/hardwood stands should be thinned heavy during the first thinning by removing two adjacent rows instead of one.

All landings and roads should be planted to a cool season grass/cover mix after each stand is harvested. Although individual quail coveys only require approximately 40 acres of land to meet all their needs, several hundred acres of connected habitat is needed to support a viable bobwhite population. Therefore, scattered, isolated patches of habitat are not sufficient to hold populations of bobwhites with current low densities. The goal of bobwhite management on CFL should be to create a mosaic of early successional/regenerating/thinned pine.

Woodcock Management

Woodcock management opportunities will be highest on poorly drained loamy soils like those found in soil management groups 1 and 2 on stands within the General Timber Management land classification.

The general goal for woodcock habitat is to provide a mosaic of regenerating hardwood seedling/sapling stands with herbaceous openings in close proximity.

Woodcocks need rich humus layers (that support earthworms) covered by dense sapling growth (to provide protection from aerial predators) and little to no under story (to allow detection of terrestrial predators). Short rotation timber management with frequent re-entry cycles would be complementary to woodcock management. Final harvest sites should be 10 to 50 acres in size.

Mechanical site prep followed by bedding damages humus layers and woodcock habitat and so should be avoided where possible. On final harvest areas that are site prepared, consideration will be given to leaving some areas (up to 10%) with no site prep and no planting. These sites would be managed to regenerate naturally to hardwood saplings. Site prep operations that skip some areas, or site prep by fire, followed by spot planting is also likely to be complementary to woodcock management.

Deer Management

Deer thrive in the mixed-structure situation common on Chesapeake Forest Lands and their numbers can become a serious ecological problem, particularly when they over-browse vegetation and alter biological diversity. In order to maintain a productive forest, deer populations need to be managed at socially and ecologically acceptable levels through hunting. The goals for deer management include: maintaining population levels that allow natural tree growth and regeneration; limiting browsing impacts on rare, threatened and endangered plants; and limiting deer impacts on neighboring agricultural lands. These goals will be achieved through a combination of public and club hunting (Chapter 9).

Wild Turkey Management

Although wild turkeys are thriving on the lower Eastern Shore of Maryland, CFL should be managed to provide the high-quality habitat required to continue supporting high turkey population densities. Many practices implemented to benefit bobwhite quail will also benefit wild turkeys. Thinning and controlled burning of pine stands, maintenance of permanent herbaceous openings, and seeding of logging roads and landings to a cool season grass/legume mix will encourage optimal turkey brood habitat that is thought to be the most critical and limiting factor affecting wild turkeys in Maryland. Additionally, hard-mast producing tree and shrub species are an important component of wild turkey habitat and should be retained and their establishment encouraged during forest management operations.

